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Círculo e Meio
An Audio-Visual Live Coding Performance Combining Choreographic Thinking and Algorithmic Improvisation

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Abstract

The performance reflects how language boundaries are enacted through the computing environment and society, exploring how movement, gestures, discourses, and behaviours are choreographed and communicated through these apparatuses, and how our hybrid systems and transdisciplinary research co-construct each other. It is informed by recollection of sources that reference principles of non-linear composition, non-hegemonic time and space constructs, and techno-feminist understandings. It combines two connected digital interfaces. Using a shared choreographic vocabulary, the performers create meaning around the act and conditions of coding.

Choreographic and musical references

The authors have been collecting materials[1] which address the concept of the 'circle' as a spatio-temporal construct with considerable history. Notation systems convey notions of standardized measures, codes, gender, class, rituals, beliefs, ideologies, formation of habit and perception (Aureli, 2016), and their use determines the concrete ways in which we inhabit and produce physical and digital spaces (Aureli, 2016). As interfaces are "scripted" with ideologies (Tomás, 2016), the performers wanted to engage critically with the political significance of these references, questioning the (normative) power of abstractions (Feyerabend, 1999) and geometrical definitions as well as their power of transgression, commonality, consciousness, and freedom.

To illustrate the later, scores from various choreographers were analysed; for example, Eshkol-Wachman Movement Notation[1], which "utilizes a spherical system of coordinates, similar to latitude and longitude on a globe", considering both human and non-human bodies as networks of actors with equal rights within a mediasphere (EWMN, 2001).

In dance, the circle is regarded as "one of the oldest known dance formations it is a style of dance done in a circle or semicircle to musical accompaniment, such as rhythm instruments and singing" (Sachs, 1938). Anku describes the African concept of time as circular or spiral in nature and explains its manifestation in traditional African drumming practices (Anku,2000). Many of those rhythms can be generated by the Euclidean rhythm algorithm and visually expressed as events along the circumference of a circle (Toussaint, 2004). Circles or semi-circles of drummers have been documented among many cultures over a longer time span than hippie social ritual, such as in (Greco, 2008) and (Williams, 2015). Drum circle etiquette echoes the ethical prescriptions of the feminist approach the authors have adopted. (Hull, 2011; Hull, 2018)

A hybrid language and dual interface

The authors make use of two connected digital interfaces for live algorithmic composition. Bell uses Conductive, an audio system live coded in the programming language Haskell, and Chicau uses the web browser to code in JavaScript. The interfaces are connected through OSC tools enabling data-sharing and possibilities for each system to influence the other.

Following our conceptualization of the 'círculo', the choreographic thinking brings repetition and reversibility as central to the piece. The performance unfolds in a circular pattern. The code input written in the web browser will be revisited and activated in different moments, and unpredictable results will be displayed. The title of the piece can be translated as "a circle and a half". This "half" is interpreted loosely to mean an incomplete circle.

Concretely, one or more complete cycles of a Euclidean rhythm are followed by an incomplete cycle, and up to three rhythm patterns are ud (both standard Euclidean rhythms and "circle and a half" rhythms). Percussion sounds were recorded and processed to emphasize the idea of drum circles and the universality of Euclidean rhythms, with processing to increase the range of expression, and a three-stage mapping from text to sonic characteristics was used to design additional sound atoms. The performance will be divided into moments in which one or both screens are active and may include physical movement in the performance space.[2]

1 The inventory of choreographic and musical scores: http://circle.renickbell.net/index.html

2 The performance set up: http://circle.renickbell.net/set_up.html

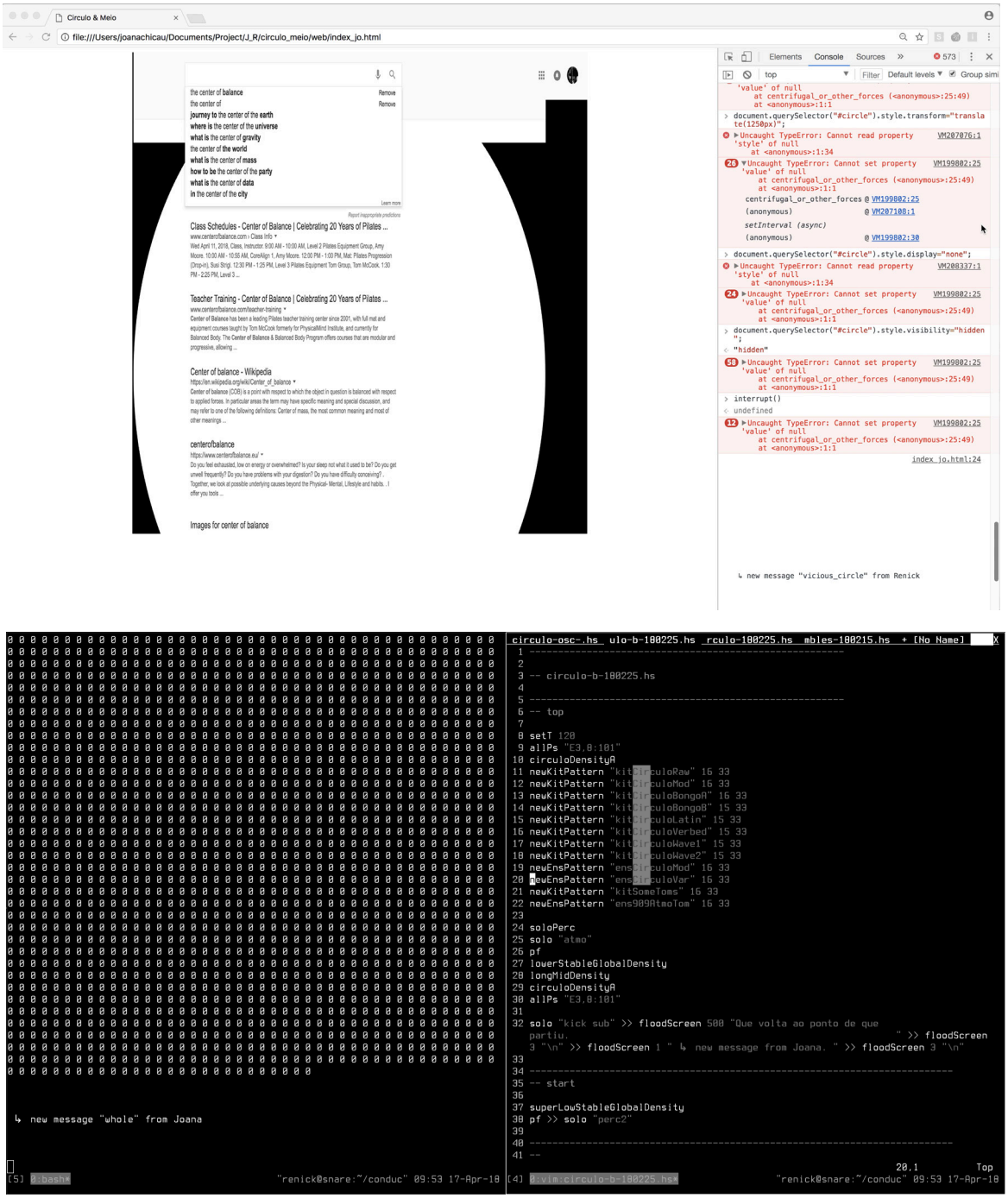
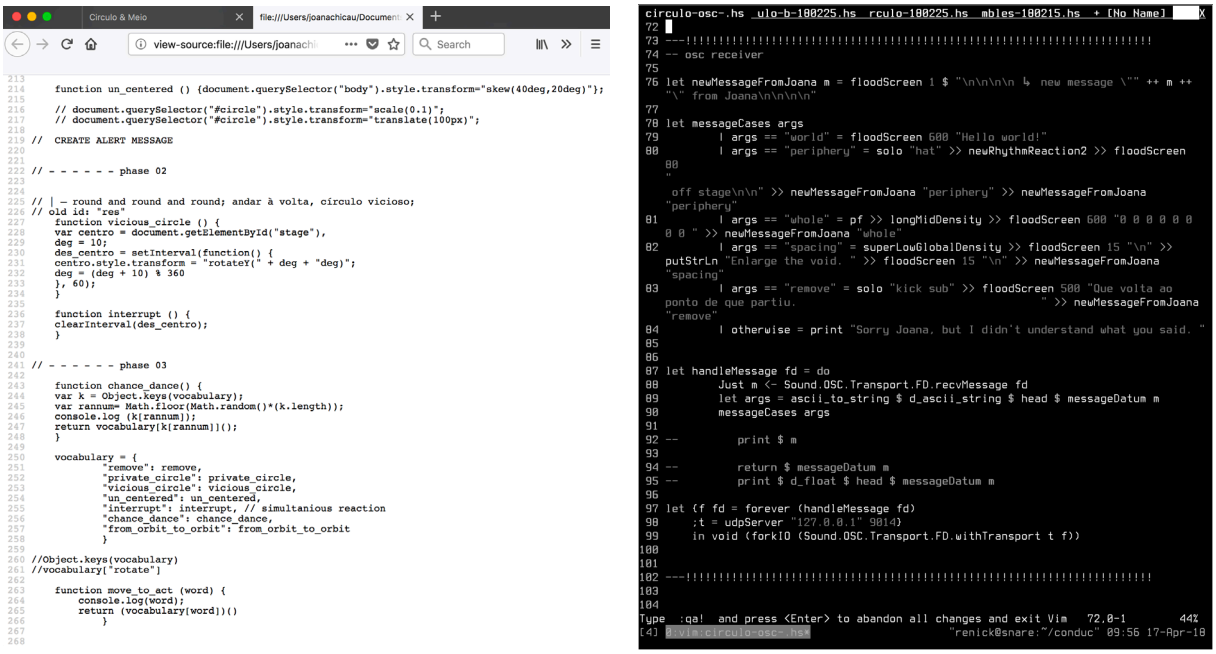


Figure 1. Chicau (top) will be activating her choreographic score written in web programming languages (HTML/CSS/JavaScript). Chicau will use the the browser console to write functions that draw on choreographic concepts. She will be using both local files and already existing interfaces, such as google search. Bell (bottom) will live code in Haskell, using functions from the Conductive library to compose, perform, and improvise the musical component of the performance to support the choreographic goals of the piece. He will be triggering sounds specifically designed for the performance as well as some sound processing through external hardware also connected to the live coding environment.



```
Circulo & Meio
file:///Users/joanachicau/Document
view-source:file:///Users/joanachi
Search

213
214     function un_centered () {document.querySelector("body").style.transform="skew(40deg,20deg)"};
215
216     // document.querySelector("#circle").style.transform="scale(0.1)";
217     // document.querySelector("#circle").style.transform="translate(100px)";
218
219 //  CREATE ALERT MESSAGE
220
221
222 // - - - - - - phase 02
223
224
225 // | — round and round and round; andar à volta, círculo vicioso;
226 // old id: "res"
227     function vicious_circle () {
228     var centro = document.getElementById("stage"),
229     deg = 10;
230     des_centro = setInterval(function() {
231     centro.style.transform = "rotateY(" + deg + "deg)";
232     deg = (deg + 10) % 360
233     }, 60);
234     }
235
236     function interrupt () {
237     clearInterval(des_centro);
238     }
239
240
241 // - - - - - - phase 03
242
243     function chance_dance() {
244     var k = Object.keys(vocabulary);
245     var rannum= Math.floor(Math.random()*(k.length));
246     console.log (k[rannum]);
247     return vocabulary[k[rannum]]();
248     }
249
250     vocabulary = {
251             "remove": remove,
252             "private_circle": private_circle,
253             "vicious_circle": vicious_circle,
254             "un_centered": un_centered,
255             "interrupt": interrupt, // simultanious reaction
256             "chance_dance": chance_dance,
257             "from_orbit_to_orbit": from_orbit_to_orbit
258             }
259
260 //Object.keys(vocabulary)
261 //vocabulary["rotate"]
262
263     function move_to_act (word) {
264         console.log(word);
265         return (vocabulary[word])()
266             }
267
268
```

```
circulo-osc-.hs  ulo-b-180225.hs  rculo-180225.hs  mbles-180215.hs  + [No Name]  X
72
73 ---!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
74 -- osc receiver
75
76 let newMessageFromJoana m = floodScreen 1 $ "\n\n\n\n\n ↳ new message \"" ++ m ++
   "\" from Joana\n\n\n\n"
77
78 let messageCases args
79         | args == "world" = floodScreen 600 "Hello world!"
80         | args == "periphery" = solo "hat" >> newRhythmReaction2 >> floodScreen
   80
   "
    off stage\n\n" >> newMessageFromJoana "periphery" >> newMessageFromJoana
   "periphery"
81         | args == "whole" = pf >> longMidDensity >> floodScreen 600 "0 0 0 0 0 0
   0 0 " >> newMessageFromJoana "whole"
82         | args == "spacing" = superLowGlobalDensity >> floodScreen 15 "\n" >>
   putStrLn "Enlarge the void. " >> floodScreen 15 "\n" >> newMessageFromJoana
   "spacing"
83         | args == "remove" = solo "kick sub" >> floodScreen 500 "Que volta ao
   ponto de que partiu.                                    " >> newMessageFromJoana
   "remove"
84         | otherwise = print "Sorry Joana, but I didn't understand what you said. "
85
86
87 let handleMessage fd = do
88         Just m <- Sound.OSC.Transport.FD.recvMessage fd
89         let args = ascii_to_string $ d_ascii_string $ head $ messageDatum m
90         messageCases args
91
92 --          print $ m
93
94 --          return $ messageDatum m
95 --          print $ d_float $ head $ messageDatum m
96
97 let (f fd = forever (handleMessage fd)
98     ;t = udpServer "127.0.0.1" 9014)
99     in void (forkIO (Sound.OSC.Transport.FD.withTransport t f))
100
101
102 ---!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
103
104
Type  :qa!  and press <Enter> to abandon all changes and exit Vim   72,0-1        44%
[4] 0:vim:circulo-osc-.hs*                    "renick@snare:~/conduc" 09:56 17-Apr-18
```

Figure 2: detail of shared vocabulary used for the interaction between the two systems. Chicau (left) will receive the messages from Renick which will be interpreted in JavaScript and trigger various visual outcomes in the webpage. Bell (right) will receive messages from Joana which will be translated to Haskell, and trigger different sound functions. Joana and Renick will be co-choreographing the piece.

External links and Media Assets:

The documentation of the project is delivered in an open-ended format, following Free/Libre Open Source (Floss) model. The source code for the project will be updated on github and in the form of an inventory/catalogue which further explains the conceptual dimension of the project.

Link to the performance code:
https://github.com/JoBCB/circulo-meio

Video recording /prototype:
http://circle.renickbell.net/video.html

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